SURVEY OF TOTEM POLES IN SOUTHEAST ALASKA AND RECOMMENDATIONS FOR THEIR PRESERVATION OR RECOVERY

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Introduction

The excellence of Northwest Coast Indian art has been recognized since the early periods of contact between the native Indians and the early explorers who first entered the area of what is today western Canada and southeast Alaska. Numerous, highly valued pieces of this unique artistry are now owned by various museums in Europe and in America. While the native Indians were proficient at painting, weaving, and small-scale sculpture in wood, bone, and stone, their outstandingly impressive product was the large carved totem poles.

Totem pole carving is not an ancient art form among the Pacific Northwest Indians as has been erroneously suggested. Actual totem pole use became widely practiced and was subsequently terminated between the years 1800 and 1900. A currently developing project aimed at salvaging the last remnants of these highly unique carvings that still remain at abandoned village sites in southeast Alaska is finally though belatedly started. The related problems and the proposed procedures are presented here.

Some Historical Aspects of Totem Poles

Much of the totemic art form and technique had evolved prior to the development of the totem pole. For example, many of the crest figures and decorative, space-filling designs found on totem poles as well as the wood-carving technique itself had a much earlier development in the production of food containers, chests, rattles, and ceremonial masks. Further, the interior house posts that were a feature of some of the large community dwellings were carved before the large and more impressive, free-standing totem poles (see Figs. 1 and 2).

The several recognized types of totem poles include the impressive, widely known, heraldic totems (Fig. 3), the memorial pole (Figs. 4, 5, and 6), the mortuary or burial pole, and the ridicule pole. All of these were normally

free standing. In addition, house front poles and both the carved interior and exterior house posts are often considered as totems, although these were attached or supporting house members.

Once carved and erected during an appropriate ceremony or potlatch, totem poles were traditionally given little maintenance or repair. Fortunately, the poles were very durable. Even though these large sculptures have remained in an exposed, extremely wet and decay-hazardous environment without benefit of preservative treatment, they have normally persisted for from 50 to more than 100 years. Thus, the neglect of poles was understandable as long as new poles were being produced continually.

Several factors contributed to the abandonment of totem pole carving, and in some instances, to the actual purposeful destruction of the then existent poles. Dominant among these factors was the widespread adoption by the native Indians of the white man's way of life, including his concept and practice of religion as introduced by the early missionaries. Too frequently the missionaries mistakenly associated pagan religious practices with the totem poles, and became successful advocates of totem pole destruction. Further, the curtailment by law of the potlatch ceremonies indirectly, but definitely, terminated the production of the large heraldic totems.

Most of the old village sites, as for example, Old Kasaan (see Fig. 7), that had been occupied during the 1800's were abandoned by 1900 or 1910 and relatively few of the poles were moved from these old villages to the newly established centers of Indian population. Thus, the poles now available for retrieval are those which have remained in the old villages, and were passed over as salvable in the CCC program to be noted subsequently.

A number of accounts document what is known of the history and development of totem poles. Among the outstanding contributors has been Marius Barbeau whose numerous reports covered his own extensive field studies in Canada and Alaska. In his Totem Poles, Volumes I and II (1), he has also importantly reviewed the existing pertinent records and literature from the very earliest recorded reports. Another important account of totem poles and their history is by Edward L. Keithahn (4). This report also contains an excellent photographic coverage of many Alaskan totems.

In their publication, The Wolf and the Raven, Viola Garfield and Linn Forrest (3) present the best account now available of the only systematic program of totem pole retrieval and preservation previously undertaken in southeast Alaska. This program, dating from 1938 to 1941, was a joint effort by several organizations and interested individuals, and was administered in its several localities by the U.S. Forest Service as Civilian Conservation Corps projects. The best Indian artists of the day were employed along with other Indian workmen to do the salvage, restoration, and recarving of the poles which were considered salvable at that time. A number of the large old poles were resurfaced by the removal of surface-weathered or -decayed material, given surface preservative treatments, repainted, and set up in newly established totem parks (see Fig. 3).

Only a few older wood carvers, experienced in totem pole carving, were available for the project since very few totem poles had been carved in the previous 40 years. Consequently, some of the carving was done by inexperienced workers. In numerous cases, heavily decayed poles were copied completely. A very serious and irreplaceable loss resulted from the abandonment of these old original poles after they were brought to the work centers and used as models for copies that were often inaccurate and mediocre carvings. The overall achievement of this program, however, was generally commendable and timely, and the resulting six totem parks, located near present centers of Indian population, still retain the salvaged or copied poles.

Recent Interest in Totem Pole Recovery

Katharine Kuh, an art critic and vigorously forthright advocate for the recovery and protection of northwest Indian art, has emphatically presented the generally sorry plight of the remaining totem poles in a 1966 Saturday Review article, "Alaska's Vanishing Art" (5).

The support and cooperative efffort necessary to initiate a program of retrieval and preservation slowly gained momentum after 1966 with the mutual efforts of numerous individuals and groups. Finally, under the administrative leadership of the Alaska State Museum and Mrs. Jane Wallen, its director, a survey was undertaken to determine accurately what amount of material was still available to retrieve, its location, and its aesthetic and physical condition. This survey was completed in 1969, and the report (2) edited by Wilson Duff, anthropologist at the University of British Columbia and member of the survey team, was prepared. Based on the survey findings, specific plans for retrieval were prepared as a prerequisite to obtaining the necessary financial backing for the project.

The totem pole recovery program is scheduled to begin in July 1970. The program is unusual in having exceptionally wide backing, including support from the State of Alaska, the U.S. Forest Service and possibly other Federal agencies, the Smithsonian Institution, and the very significant approval and support of a number of southeast Alaskan Indian and other Alaskan organizations. Additional grants for some related aspects of the project are being sought currently.

Survey Findings

The 1969 survey included an appraisal of all the poles that could be located at known abandoned village sites with a resulting selection of 41 totem poles or pole fragments to be retrieved from 10 sites. Unquestionably, this material is in a much more advanced stage of decay than has been the case for any previously recovered poles, but with carefully supervised work and the necessary precautions, successful retrieval will be possible. Representative totems and totem carvings are shown in the figures of this paper. Recovery would not be feasible for most of the selected units if they were not to be sheltered in permanently dry environments.

The survey also included a brief inspection of all totem poles in the six totem parks plus the fine poles at the Sitka National Monument. Since it is highly desirable to maintain these poles in their present exposed locations as long as possible and without benefit of shelter from rain and snow, suggestions for the treatment and preventive maintenance measures for these poles will be considered separately. The same suggestions will apply also to the several poles maintained by cities or private groups, as for example, in Ketchikan and in Wrangell.

Characteristics of Wood Decay

Decay is caused by simple thread-like plants, classified as fungi, that penetrate, enzymatically break down, and utilize part of the wood substance for food. To remain active and capable of causing appreciable decay, fungi must also have an adequate supply of water (more than 28 percent based on the dry weight of the wood), a supply of oxygen, and a favorable temperature (4 to 35° C). Controlling the water supply or modifying the food supply by toxic chemicals commonly affords the most practical means of preventing decay. Unfortunately, the thorough or complete impregnation of large wood members with toxic chemicals is an impractical, if not an impossible, procedure. In many instances, it is more practical to keep the wood safely dry.

Natural Decay Resistance of Western Redcedar

Western redcedar heartwood, from which the large totem poles were always carved, characteristically has a high natural decay resistance. This is attributable to phenolic-like substances (broadly referred to as extractives) that are deposited in most of the heartwood by the living tree. These extractives are water soluble to some degree, however, and during prolonged weathering, the extractives are leached from the exposed surface wood. In addition, certain nondecay fungi and other micro-organisms may slowly degrade the extractives. Certain species of decay fungi are uniquely tolerant of the cedar extractives and are capable of infecting the normal or slightly leached parts of the wet heartwood.

Preservation Limitations

Because the advancing interior margins of deep decay infections are in relatively sound wood that is nearly impervious to surface applications of chemical preservatives, the deeply established decay organisms are not likely to be affected by such treatments. Radial and tangential penetration or movement of liquid preservative chemicals through cedar heartwood is very limited. It is this factor that makes the prospects of permanently maintaining old totem poles in exterior exposures less than promising. This applies more to the older and more massive round poles with deeper infections than to the more recently carved poles that are still relatively sound.

Types of Deterioration and Some Suggested Steps for Totem Pole Recovery

The prevailing physical conditions of the available totem poles at the abandoned village sites are quite variable and range from poles which are down, decayed, and totally beyond recovery, to poles that are standing and a few which appear relatively sound. Since few, if any, of these poles are less than 70 years old, and many are known to be much older, it must be assumed that they all may contain localized areas of hazardously weakened wood. Decay would normally be expected at the groundline, but interior decay may be more advanced near the pole top or at some point along its length. Consequently, the procedure for lowering and moving the poles must be undertaken with due consideration for the protection of both the workmen and the poles to be salvaged.

Most of the decay observed has been of the brown-rot type and occurs predominantly in two patterns. Visible, external decay is usually present in the old poles and is most commonly found associated with end-grain exposures where carved details have required cutting sharply across the wood grain to appreciable depths (see Fig. 8). Such end-grain exposures predispose the wood to more rapid and deeper wetting than occurs through face-grain exposures. Thus, areas adjacent to the tops of figure or crest heads, shoulders, hat brims, and any other sharply protruding or sharply recessed carving detail may be decayed to a point of extreme fragility. The surfaces of severely decayed areas will not support direct rope or line attachment or even support the pole's own weight if it were laid out horizontally on an irregular surface. Cushioning most of the carved surfaces during pole movement will certainly be necessary and it would be a recommended procedure for work with all the poles.

A second form of decay is the internal decay that commonly is not detected by visual inspections. Such decay infections may have started deeply in the pole at large checks, at limb traces (knots), or it may have progressed longitudinally in the pole from an area of exposed end grain. Such decay is commonly evident in recently split poles. It can be detected also by coring, or if not too deep, to a less certain and positively demonstrable degree, by probing. The age as well as the exposure to which the old poles have been subjected make it highly probable that decay of the internal type is present in all of these totem poles. Both forms of decay are favored by increased shading as the overgrowth of the encroaching rain forests becomes more complete and higher wood moisture levels in the poles result from the absence of intermittent drying exposures.

In a number of cases, relatively heavy attack by carpenter ants was observed and although such attacks are frequently associated with decayed wood, which commonly affords a more favorable environment for the ants than sound wood, such attacks, if extensive, do account for additional losses of strength. There was also evidence of attack by other insect species, but these, as observed, were less significant and of little consequence.

While decay by wood-destroying fungi has been the primary cause of pole wood deterioration, subsequent establishment of mosses, lichens, and higher plants, and the penetration of totem pole wood by tree roots have also been very significant deteriorating factors. This problem is best illustrated by the abundant growth of broadleaf brush and conifer seedlings which have become

established in the lichen-covered, decayed parts of some poles (see Fig. 4, and compare Figs. 9 and 10). The continued development and root penetration of spruce or hemlock seedlings have finally resulted in the total splitting of some poles throughout their full length.

In some poles, internal decay will have reduced the effective cross-sectional area of residual sound wood very significantly and thus its strength, so that the pole will have to have additional longitudinal support before moving it from a vertical position, if standing, or from a fully supported position, if already down. Rather than attempt to determine in the field which poles need such support and where, it will be a more practical and a safer procedure to provide full-length support for all poles. By following a systematic procedure of strapping longitudinally supporting timbers over cushioning materials, additional assurance can be gained that the cushioning material will be held in place to protect the carved and often fragile surfaces of the pole.

Vandalism and the careless control of fire will continue to be an increasing hazard for the abandoned village poles until they are retrieved and placed under protective custody, particularly since more and more visitors spend time at the unoccupied, outlying sites. Note the example of vandalism illustrated by comparing Figures 6 and 10. Vandalism has been particularly destructive at some burial grounds.

Conservation Meausres for Totem Poles to be Maintained in Dry Shelters

No toxic wood preservatives for decay protection will be required for the poles that will be maintained in an air-dry condition. Such maintenance will not require a heated or even a totally enclosed structure but simply complete protection from rain, snow, or any other form of direct wetting such as might result from ground contact. During the initial drying period just after the poles are retrieved and before they are adequately dried, some surface molding may be observed, but this will very likely be insignificant.

Both termites and carpenter ants are attracted to damp, decayed wood, but any insects present will not likely remain in the decayed material or be attracted to it after it reaches an air-dry condition. Therefore, no applications of insecticide are suggested unless specific need arises as evidenced by the active presence of insects. A simple, direct application of an appropriate insecticide will likely be adequate for any observed infestations present when the poles are brought into a drying area.

The principally needed conservation treatment for the abandoned village poles will be the reinforcement of the fragile carved surfaces. We have obtained, at the suggestion of Mr. Robert Organ at the Smithsonian, samples of several materials which will be tried when heavily deteriorated samples of western redcedar are received from Alaska. I am particularly hopeful that the weathered, silver-gray surface color of the old carvings can be maintained. It also seems likely that the moss and lichen overgrowth may be desirably retained in some instances where its removal would only reveal a heavily decayed, pulpy wood mass with no carving detail.

Minimizing Drying Damage

There is a possibility of severe checking or even splitting of the wood when the poles are dried thoroughly in sheltered permanent exhibit areas. The presence of decay and the softened, porous nature of the old, weathered poles will affect to some degree the result of drying stresses that commonly cause degrade of large wood members during initial drying. To predict the extent of this degrade in the old poles will be difficult, and the most practical approach to minimizing such checks and splits will be to dry them slowly. This will help by avoiding large differences in the wood moisture at different depths in the pole wood. It will be desirable to routinely inspect the drying poles and if severe degrade starts, drying rates can be slowed with plastic wraps or covers. More severe defects from drying would normally be expected in the larger round poles than in the half-round, hollowed poles. Exposure of the wet poles to the rapid drying rates of winter-heated museum space without humidity control would likely result in severe degrade.

In numerous instances, old wood artifacts and waterlogged members have been protected from shrinkage (drying) defects by impregnating the wood with polyethylene glycol. The extremely large size of the totems and the hygroscopic nature of the chemical make dimensional stabilization by this treatment impractical. Because most of the poles are already checked to a considerable degree (see Figs. 5 and 8), it would appear more practical to accept the additional drying checks or splits and mend these as necessary by wood doweling pins or other physical supportive measures.

Preserving Totem Park Poles

Since it is highly desirable to maintain these poles for as long as possible in their presently exposed positions, a special in-place treatment should be attempted to try to stop existing, deep, interior decay infections. No in-place, surface application of liquid wood preservatives is likely to control such infections that are unquestionably present in some of the 30- to more than 100-year-old poles. Thus, the following approach to the problem will be tried.

An experimental treatment that seems to offer promise consists of fumigation, at higher than normal gas concentrations and for longer than normal treating periods, to be followed by a surface-applied wood preservative treatment. We plan to compare two promising fumigants--methyl bromide and sodium methyl dithiocarbamate. It is generally thought that methyl bromide is one of the best available fumigants, having a high degree of effectiveness against fungi. The sodium methyl dithiocarbamate is a widely used soil fumigant, having a lower toxicity for human beings, and thus more desirable than the methyl bromide, if it is sufficiently effective. Surprisingly few data are available on fumigant penetration in sound wood of large sizes. Theoretically, the prospects are not highly promising based on gaseous diffusion in sound wood. However, the pole wood is not entirely sound, and there is some basis

for expecting moderate to good gas diffusion in the highly valued, carved portions of the poles and possibly much deeper penetrations will be obtained.

Since no residual preservative effects are known to result from such gas treatments, fumigation would be followed by a flooding or brushed-on surface treatment with a pentachlorophenol solution. This would be necessary to establish a surface barrier against reinfection by decay fungi and other microorganisms. Where, for any reason, poles cannot be fumigated first, the following treatment alone is suggested as a next best procedure for in-place treating.

Wood Preservative Treatment Recommended for Poles to be Maintained in Exposed Environments

Old totem poles, which have or have not received prior fumigation, will require the best possible preservative treatment to extend the period that they may be safely maintained in totem parks or other exterior exposures. The same treatment would also be appropriate for any very old poles scheduled for indoor protection, but where a long delay is anticipated before the pole can be sheltered and dried.

A colorless preservative, pentachlorophenol, in an appropriate hydrocarbon solvent is recommended. This choice of preservative is suggested to obtain (1) a desirable degree of leaching resistance, (2) ease of application by brushing or spray flooding as needed, (3) dual effectiveness against a wide spectrum of both fungi and insects, (4) the choice of including water-repellent additives in the preservative only when needed, (5) minimal discoloration of the pole wood that results from treating, and (6) a resulting nonoily and clean surface of the treated poles that can be painted to duplicate the limited original coloring.

I recommend using pentachlorophenol at the higher concentration of 15 percent rather than the usual 5 percent concentration, although the use of 5 percent solutions can be increased in effectiveness by repeated or prolonged applications. The 15 percent strength can be obtained by using a higher grade solvent or by modifying a mineral spirit solvent with an alcohol additive to increase the level of the penta solubility. If advantageous, the materials can be mixed at the work site in the quantities needed, with or without water-repellent additives.

The water-repellent additives should not be used in the brush or spray flooding applications that are repeatedly applied to poles over a period of days that allows intermittent surface drying, since the wax-like repellent material will accumulate and "set up" after the first or second application. This waxy, surface coating would then restrict prompt preservative penetration during subsequent short period applications. However, because applications of penta in light oil are made much more effective by a water-repellent additive that helps reduce both water penetration into the wood and preservative leaching, it will be advisable to treat the poles thoroughly with a final application of water-repellent pentachlorophenol. As only limited

painting will likely be involved, a larger-than-normal percentage of repellent additives can be used advantageously in the final application.

The duration of treatment by either flooding or brush application can be varied. I suggest for either treatment that daily applications should be made as thoroughly as possible for at least 5 days; longer could be beneficial. Surplus preservative that can be reclaimed after brush or flooding applications can be reused and should not be discarded.

Areas of the totem poles needing particularly thorough treatment should include the following:

(1) All exposed end-grain wood resulting from carved contours of the figures. This would include both the upper and lower surfaces of any relieved parts.

(2) All fine-detailed carving should be given repeated and careful preservative treatment, particularly including facial features, hands or paws, any details of feathers, form line designs, and surface texturing by tooling.

(3) Joint interfaces are quite often water-trapping areas where decay fungi become established. Such interfaces are represented by the holes or sockets for the attachment of beaks, wings, or fins, and by the interfaces that result where recarved members are used to replace deteriorated parts. Such areas should be carefully treated to saturation.

(4) Where cleats are used to attach the separately carved wings to the totem pole, proper care should be taken to see that the resulting joints and fastener holes are well treated.

I would like to emphasize that surface applications of wood preservatives on large members will not appreciably retard deep and well-established decay infections in wet wood. However, if systematic applications of water-repellent preservatives can be maintained following effective fumigation, a significant reduction in rate of decay can be achieved. An effort is being directed at finding an effective end-grain seal that will not be obvious or discoloring for additional surface-sealing applications over normally unseen parts of the park poles. Such partial control of decay may be the most practical procedure with the recognition that the large old poles cannot be maintained in outdoor exposures indefinitely.

The attention of the reader is directed to the precautionary statements at the beginning of this report regarding the use and proposed experimental trials of pesticides.

Bibliography

1. Barbeau, Marius. Totem Poles, Volumes I and II. National Museum of Canada, Ottawa, 1950, 1964.

2. Duff, Wilson, Jane Wallen and Joe Clark. Totem Pole Survey of Southeastern Alaska. Alaska State Museum, Juneau, Alaska, 1969.

3. Garfield, Viola E. and Linn A. Forrest. The Wolf and the Raven, University of Washington Press, Seattle, 1961.

4. Keithahn, Edward L. Monuments in Cedar. Superior Publishing Company, Seattle, 1963.

5. Kuh, Katharine. "Alaska's Vanishing Art," Saturday Review, October 22, 1966.

Figures 1 and 2.--These interior house posts represent what may well be the finest and oldest totemic carvings in southeast Alaska. Interior carved posts unquestionably antidated the exterior, free-standing totem poles. These particular posts were used in earlier houses of the Shakes clan and reportedly were brought to Wrangell from Old Wrangell in 1869. (continued)

Figures 1 and 2 (continued).--The date of their carving and the artist are unknown. Although the dorsal fins, which doubled as noses for the superimposed faces, and tails of the sharks are missing as are the abalone shell inlays for the eyes of the carved faces, the 10-foot carvings are most impressive. These remarkable pieces are free of decay but in constant danger from fire and careless handling or accidental defacement by tourists.

Figure 3.--Representative large Haida totem pole at the totem park at New Kasaan, pole approximately 50 feet high. The numerous carved relief areas exposed end-grain wood to rain wetting and moisture penetration with the resulting development of a significant increase in decay hazard. Deep decay is present in the old pole which was one of several resurfaced about 1940 in a restoration program. Part of the head of the topmost figure was found on the ground and badly decayed in 1969. This pole is the center one of the three large poles in the foreground in figure 1.

Figure 4.--Another pole on Village Island representing a memorial totem with a 5-foot horizontal bear figure above. The upper half of the supporting shaft is carved as a stylized or rather abstract whale with a human face on the whale's tail. Decay and vegetation including rooted spruce and hemlock trees are established in the back of the bear. Although decay is common and weathering severe, the checked and lichen-patched pole is highly attractive and salvable.

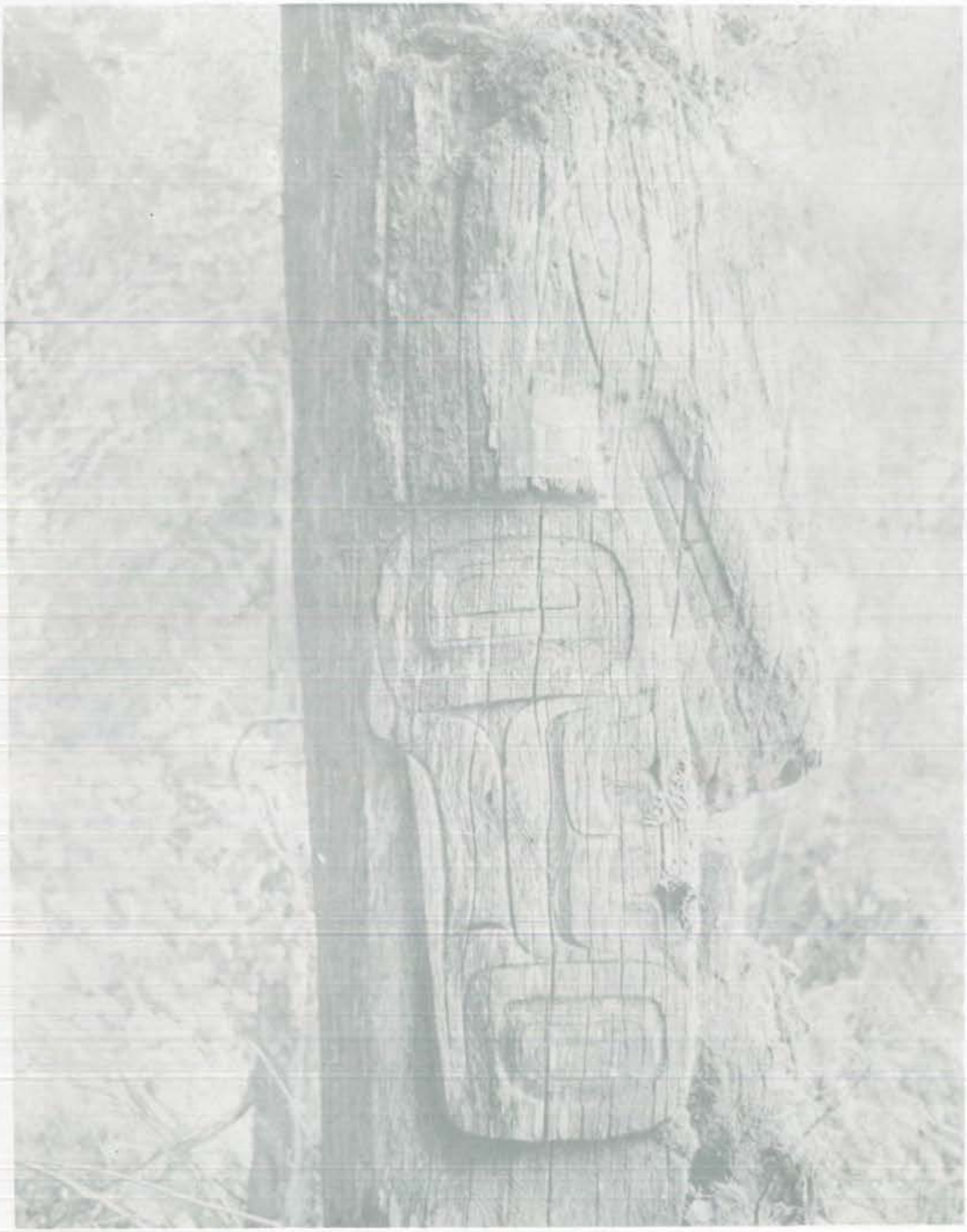

Figure 5.--Portion of another Old Kasaan memorial pole showing the very fine formalized use the classical design forms to decorate a sea lion's flipper. This piece, although decayed and extremely fragile, will be salvaged. Such carvings will require reconsolidation of the very fragile and heavily decayed parts.

Figure 6.--This exceptionally fine, 10-foot figure of a beaver is the basal figure of an Old Kasaan memorial totem. Although the left-hand side of the figure is badly decayed, much excellent carving detail remains as shown in this picture taken by Mrs. Jane Wallen (1967), Alaska State Museum. Note the adze texturing of the right eye, the cross-hatched tail, and the detailed face of the small beaver just above the tail. Compare with figure 11.

Figure 7 .--Part of "Old Kasaan," a representative Haida village as it appeared a few years after it was abandoned in 1900. There were numerous other totem poles in the old village that are not shown in the photograph, and some of these poles are still standing. Deterioration from several causes makes their early recovery and protection essential. (Picture courtesy Alaska State Museum)

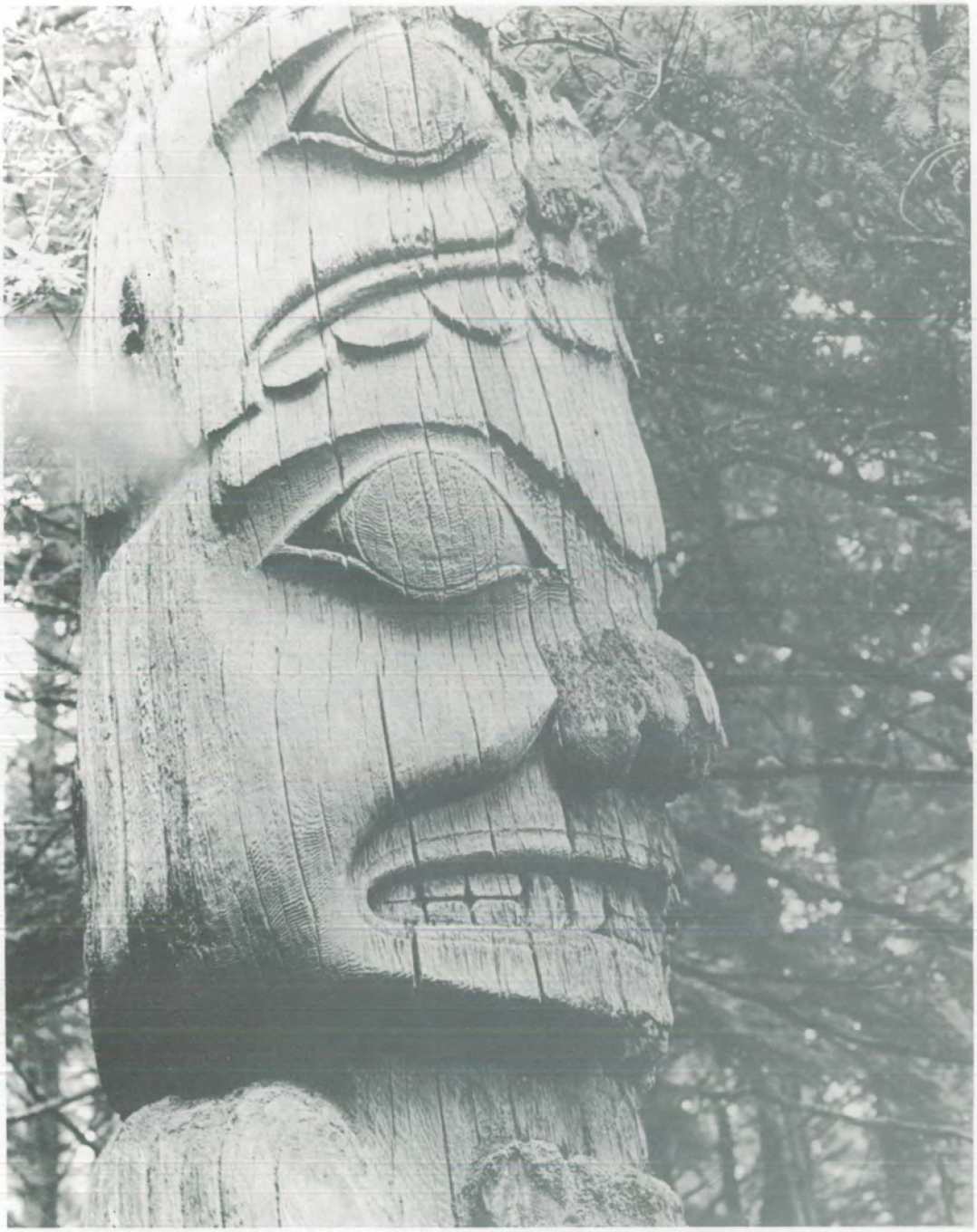

Figure 8.--This basal figure on a Tongass Village pole is an excellent piece of carving, but is heavily decayed and extremely fragile. The carved face and headdress represent the types of fragments that, with sufficient care, can be saved. (Photo by courtesy of Jane Wallen, Alaska State Museum)

Figure 9.--This photograph from the Smithsonian collection is thought to have been taken shortly after 1900. The basal carved portion of this memorial pole depicts strong man splitting a sea lion and standing above a large human face. The original uppermost figure was possibly a horizontal bear, and the pole was obviously very old when the picture was taken.

Figure 10.--This photograph taken in 1969 at the abandoned village site on Tongass Island is the same pole shown in figure 9. The developing spruce tree has totally ruined the lowermost carved face by root penentration and subsequent splitting. With care, a segment of this pole can be salvaged, although the figures are very heavily decayed.

Figure 11.--The same beaver shown in figure 5 but photographed in 1969. The small beaver face has been split off and stolen. This type of vandalism is an increasing threat to the remaining carvings in abandoned areas as more and more people visit the southeast coast and remote areas in southeast Alaska. by boat and plane.